

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number: DCX144EK-7-F
Manufacturer: Diodes Incorporated
Package: SC-74, SOT-457
Availability: Please confirm with sales

Product Page:

<https://antrexco.com/product/details/diodes-incorporated/dcx144ek-7-f.html>

Request a Quote:

[Submit RFQ for this part](#)



Scan for product page

Contact Information

Email: info@antrexco.com

WhatsApp: +86-186-8066-5326

Website: <https://antrexco.com>

Quality & Trust

New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/contact-us) or your local Diodes representative.**

<https://www.diodes.com/quality/product-definitions/>

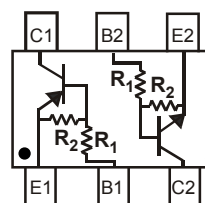
Part Number	R1	R2
DCX124EK	22kΩ	22kΩ
DCX144EK	47kΩ	47kΩ
DCX114YK	10kΩ	47kΩ
DCX123JK	2.2kΩ	47kΩ
DCX114EK	10kΩ	10kΩ
DCX115EK	100kΩ	100kΩ
DCX143TK	4.7kΩ	—
DCX114TK	10kΩ	—



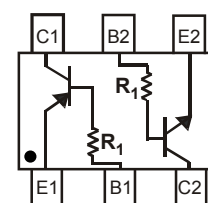
SOT26

Mechanical Data

- Case: SOT26
- Surface Mount Package
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.016 grams (Approximate)



R1, R2 Device Schematic



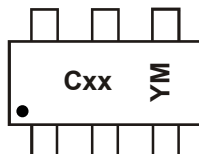
R1 only Device Schematic

Ordering Information (Note 4)

Part Number	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DCX124EK-7-F	Active	Standard	C17	7	8	3,000
DCX144EK-7	Obsolete	Standard	C20	7	8	3,000
DCX114YK-7-F	Obsolete	Standard	C14	7	8	3,000
DCX123JK-7	Obsolete	Standard	C06	7	8	3,000
DCX114EK-7	Obsolete	Standard	C13	7	8	3,000
DCX115EK-7-F	Active	Standard	C15	7	8	3,000
DCX143TK-7-F	Obsolete	Standard	C07	7	8	3,000
DCX114TK-7	Obsolete	Standard	C12	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



Cxx = Product Type Marking Code (See Page 1)
YM = Date Code Marking
Y = Year (ex: I = 2021)
M = Month (ex: 9 = September)

Date Code Key

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	I	J	K	L	M	N	O	P	R	S	T	U
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings NPN Section @ T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Supply Voltage		V _{CC}	50	V
Input Voltage	DCX124EK	V _{IN}	-10 to +40	V
	DCX144EK		-10 to +40	
	DCX114YK		-6 to +40	
	DCX123JK		-5 to +12	
	DCX114EK		-10 to +40	
	DCX115EK		-10 to +40	
	DCX143TK		-5V max	
	DCX114TK		-5V max	
Output Current	DCX124EK	I _O	30	mA
	DCX144EK		30	
	DCX114YK		70	
	DCX123JK		100	
	DCX114EK		50	
	DCX115EK		20	
	DCX143TK		100	
	DCX114TK		100	
Output Current All		I _{C(MAX)}	100	mA

Thermal Characteristics NPN Section

Characteristic	Symbol	Value	Unit
Power Dissipation (Total) (Note 5)	P _D	300	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	417	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Maximum Ratings PNP Section @ T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Supply Voltage		V _{CC}	50	V
Input Voltage	DCX124EK	V _{IN}	+10 to -40	V
	DCX144EK		+10 to -40	
	DCX114YK		+6 to -40	
	DCX123JK		+5 to -12	
	DCX114EK		+10 to -40	
	DCX115EK		+10 to -40	
	DCX143TK		+5V max	
	DCX114TK		+5V max	
Output Current	DCX124EK	I _O	-30	mA
	DCX144EK		-30	
	DCX114YK		-70	
	DCX123JK		-100	
	DCX114EK		-50	
	DCX115EK		-20	
	DCX143TK		-100	
	DCX114TK		-100	
Output Current All		I _{C(MAX)}	-100	mA

Thermal Characteristics PNP Section

Characteristic	Symbol	Value	Unit
Power Dissipation (Total) (Note 5)	P _D	300	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	417	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 5. Mounted on FR-4 PC Board with minimum recommended pad layout.

Electrical Characteristics NPN Section (R1 only) @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic (DDC143TK & DDC114TK only)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50	—	—	V	$I_C = 50\mu\text{A}$
Collector-Emitter Breakdown Voltage	BV_{CEO}	50	—	—	V	$I_C = 1\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	$I_E = 50\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 50\text{V}$
Emitter Cut-Off Current	I_{EBO}	—	—	0.5	μA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.3	V	$I_C/I_B = 2.5\text{mA} / 0.25\text{mA} - \text{DCX143TK}$ $I_C/I_B = 1\text{mA} / 0.1\text{mA} - \text{DCX114TK}$
DC Current Transfer Ratio	h_{FE}	100	250	600	—	$I_C = 1\text{mA}, V_{CE} = 5\text{V}$
Input Resistor (R_1) Tolerance	ΔR_1	-30	—	+30	%	—
Transition frequency (Note 6)	f_T	—	250	—	MHz	$V_{CE} = 10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$

Electrical Characteristics NPN Section (R1 & R2) (continued) @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	$V_{I(off)}$	0.5 0.5 0.3 0.5 0.5 0.5	1.1 1.1 — — 1.1 1.1	V	$V_{CC} = 5\text{V}, I_O = 100\mu\text{A}$
	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	$V_{I(on)}$	—	1.65 1.9 — — 1.9 1.9	3.0 3.0 1.4 1.1 3.0 3.0	V $V_O = 0.3\text{V}, I_O = 5\text{mA}$ $V_O = 0.3\text{V}, I_O = 2\text{mA}$ $V_O = 0.3\text{V}, I_O = 1\text{mA}$ $V_O = 0.3\text{V}, I_O = 5\text{mA}$ $V_O = 0.3\text{V}, I_O = 10\text{mA}$ $V_O = 0.3\text{V}, I_O = 1\text{mA}$
Output Voltage	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	$V_{O(on)}$	—	0.1	0.3	V $I_O/I_I = 10\text{mA} / 0.5\text{mA}$ $I_O/I_I = 10\text{mA} / 0.5\text{mA}$ $I_O/I_I = 5\text{mA} / 0.25\text{mA}$ $I_O/I_I = 5\text{mA} / 0.25\text{mA}$ $I_O/I_I = 10\text{mA} / 0.5\text{mA}$ $I_O/I_I = 5\text{mA} / 0.25\text{mA}$
Input Current	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	I_I	—	—	0.36 0.18 0.88 3.6 0.88 0.15	mA $V_I = 5\text{V}$
Output Current		$I_{O(off)}$	—	—	0.5	μA $V_{CC} = 50\text{V}, V_I = 0\text{V}$
DC Current Gain	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	G_I	80 68 68 80 30 82	—	—	— $V_O = 5\text{V}, I_O = 5\text{mA}$ $V_O = 5\text{V}, I_O = 5\text{mA}$ $V_O = 5\text{V}, I_O = 10\text{mA}$ $V_O = 5\text{V}, I_O = 10\text{mA}$ $V_O = 5\text{V}, I_O = 5\text{mA}$ $V_O = 5\text{V}, I_O = 5\text{mA}$
Input Resistor (R_1) Tolerance	ΔR_1	-30	—	+30	%	—
Resistance Ratio Tolerance	R_2/R_1	-20	—	+20	%	—
Transition frequency (Note 6)	f_T	—	250	—	MHz	$V_{CE} = 10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$

Note: 6. Transistor - for reference only.

Electrical Characteristics PNP Section (R1 only) @ $T_A = 25^\circ\text{C}$ unless otherwise specified

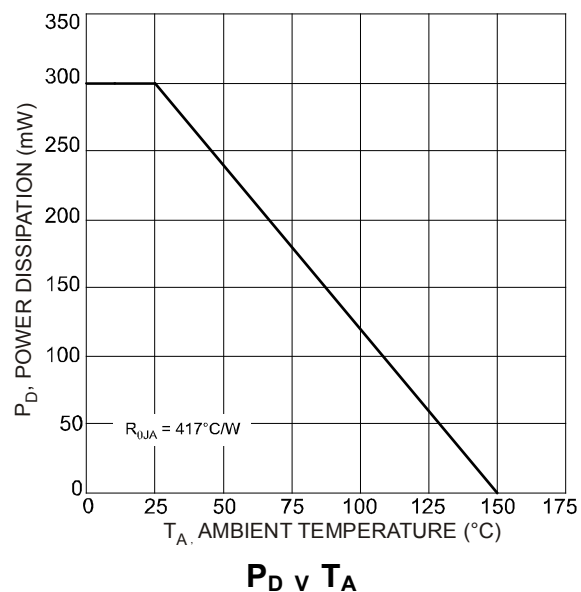
Characteristic (DCX143TK & DCX114TK only)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	$I_C = -50\mu\text{A}$
Collector-Emitter Breakdown Voltage	BV_{CEO}	-50	—	—	V	$I_C = -1\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = -50\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	—	—	-0.5	μA	$V_{CB} = -50\text{V}$
Emitter Cut-Off Current	I_{EBO}	—	—	-0.5	μA	$V_{EB} = -4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.3	V	$I_C/I_B = -2.5\text{mA} / -0.25\text{mA}$ - DCX143TK $I_C/I_B = -1\text{mA} / -0.1\text{mA}$ - DCX114TK
DC Current Transfer Ratio	h_{FE}	100	250	600	—	$I_C = -1\text{mA}$, $V_{CE} = -5\text{V}$
Input Resistor (R_1) Tolerance	ΔR_1	-30	—	+30	%	—
Transition frequency (Note 6)	f_T	—	250	—	MHz	$V_{CE} = -10\text{V}$, $I_E = 5\text{mA}$, $f = 100\text{MHz}$

Electrical Characteristics PNP Section (R1 & R2) (continued) @ $T_A = 25^\circ\text{C}$ unless otherwise specified

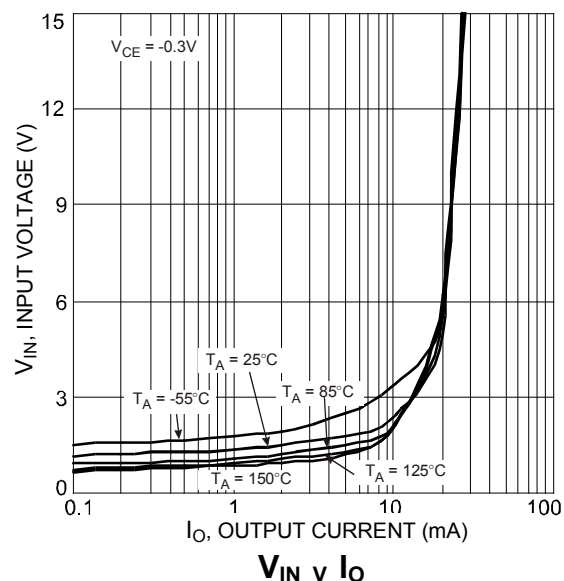
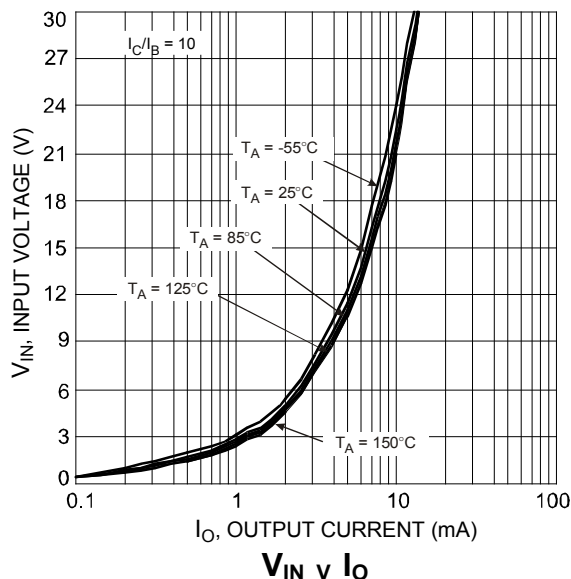
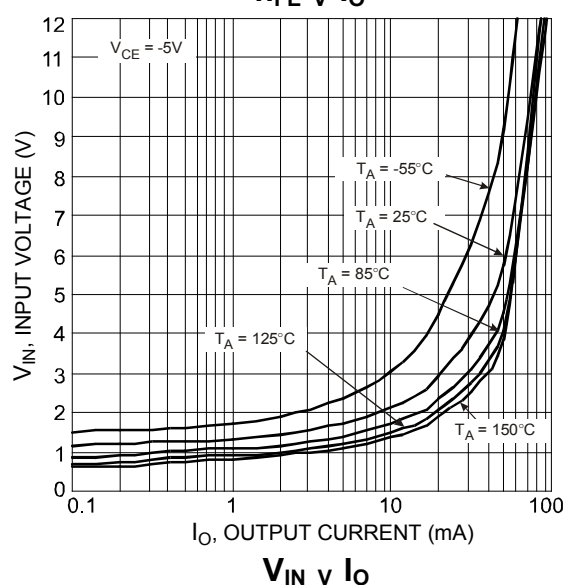
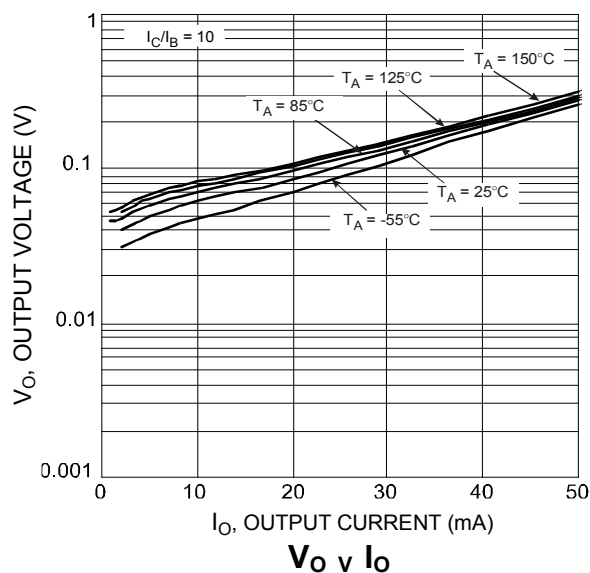
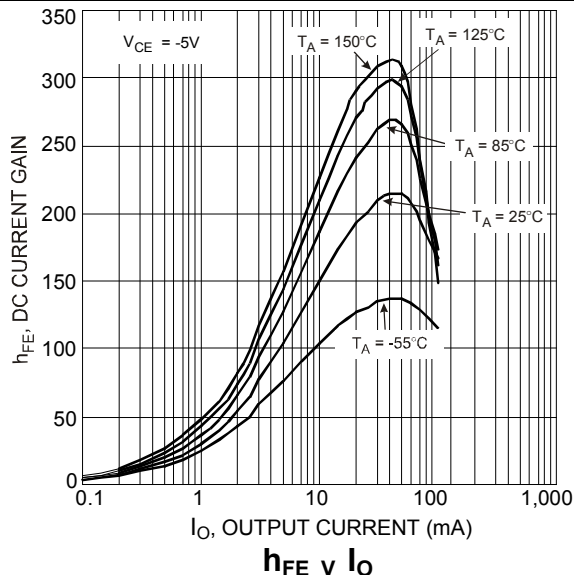
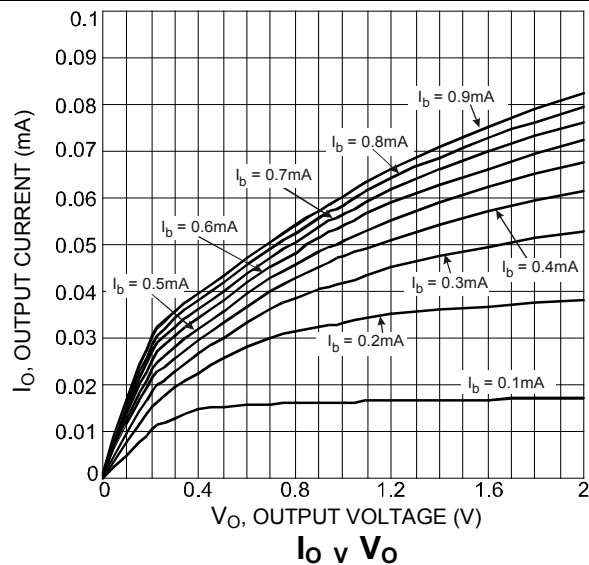
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	$V_{I(off)}$	-0.5 -0.5 -0.3 -0.5 -0.5 -0.5	-1.1 -1.1 — — -1.1 -1.1	—	$V_{CC} = -5\text{V}$, $I_O = -100\mu\text{A}$
	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	$V_{I(on)}$	— — — — -1.9 -1.9	-1.9 -1.9 -1.4 -1.1 -3.0 -3.0	V	$V_O = -0.3\text{V}$, $I_O = -5\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -2\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -1\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -5\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -10\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -1\text{mA}$
Output Voltage	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	$V_{O(on)}$	—	-0.1	-0.3	V $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$
Input Current	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	I_I	—	—	-0.36 -0.18 -0.88 -3.6 -0.88 -0.15	mA $V_I = -5\text{V}$
Output Current		$I_{O(off)}$	—	—	-0.5	μA , $V_{CC} = 50\text{V}$, $V_I = 0\text{V}$
DC Current Gain	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX115EK	G_I	80 68 68 80 30 82	—	—	$V_O = -5\text{V}$, $I_O = -5\text{mA}$ $V_O = -5\text{V}$, $I_O = -5\text{mA}$ $V_O = -5\text{V}$, $I_O = -10\text{mA}$ $V_O = -5\text{V}$, $I_O = -10\text{mA}$ $V_O = -5\text{V}$, $I_O = -5\text{mA}$ $V_O = -5\text{V}$, $I_O = -5\text{mA}$
Input Resistor (R_1) Tolerance	ΔR_1	-30	—	+30	%	—
Resistance Ratio Tolerance	R_2/R_1	-20	—	+20	%	—
Transition Frequency (Note 6)	f_T	—	250	—	MHz	$V_{CE} = -10\text{V}$, $I_E = -5\text{mA}$, $f = 100\text{MHz}$

Note: 6. Transistor - for reference only.

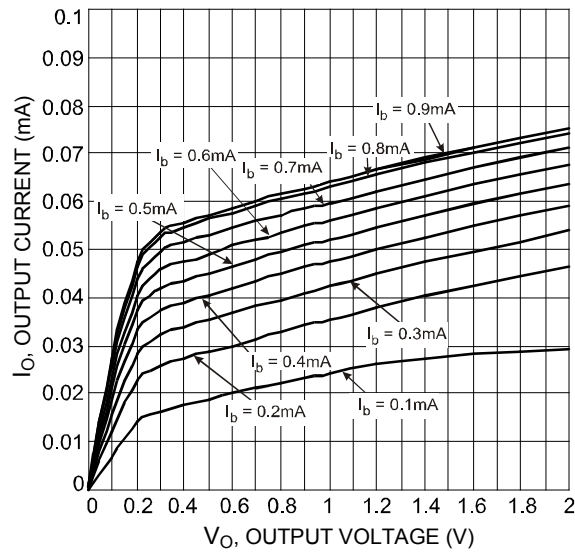
Typical Curves – Total Device



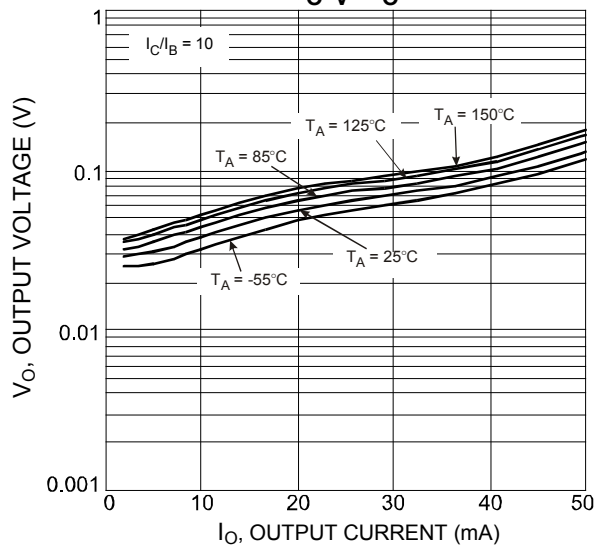
Typical Curves – DCX124EK PNP Section



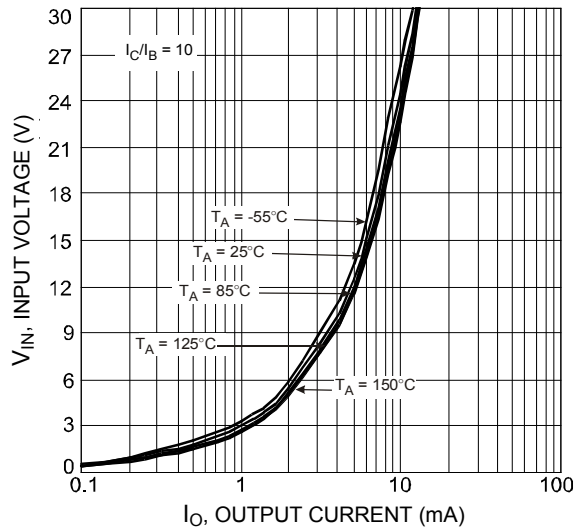
Typical Curves – DCX124EK NPN Section



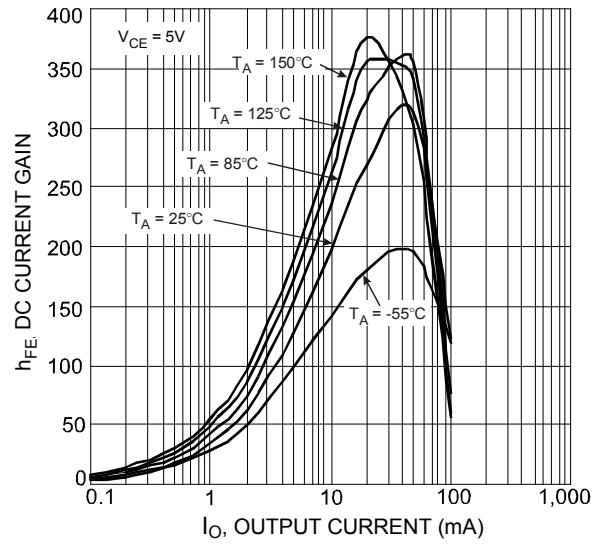
I_O v V_O



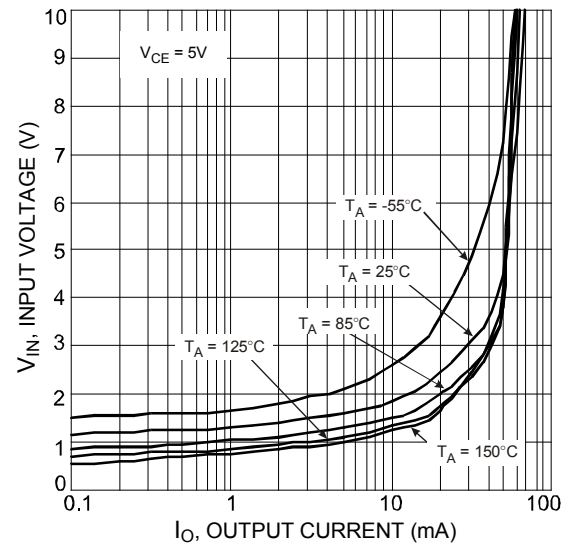
V_O v I_O



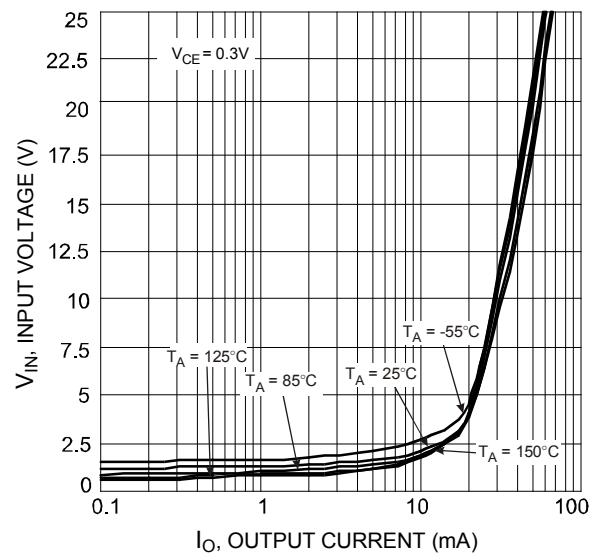
V_{IN} v I_O



h_{FE} v I_O

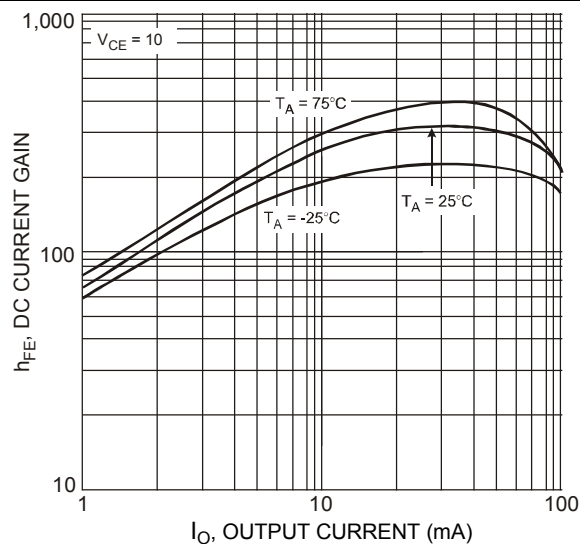


V_{IN} v I_O

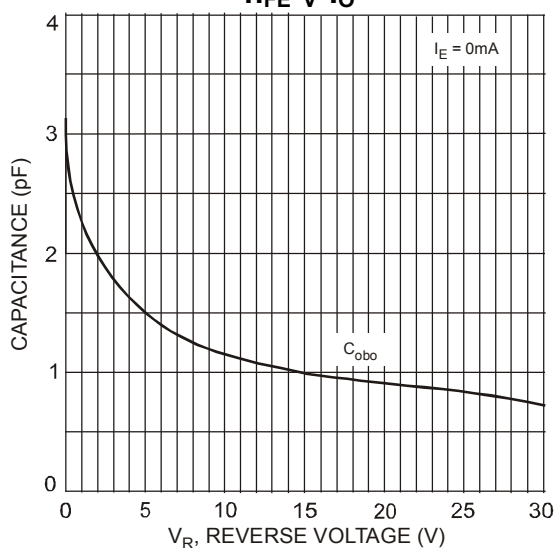


V_{IN} v I_O

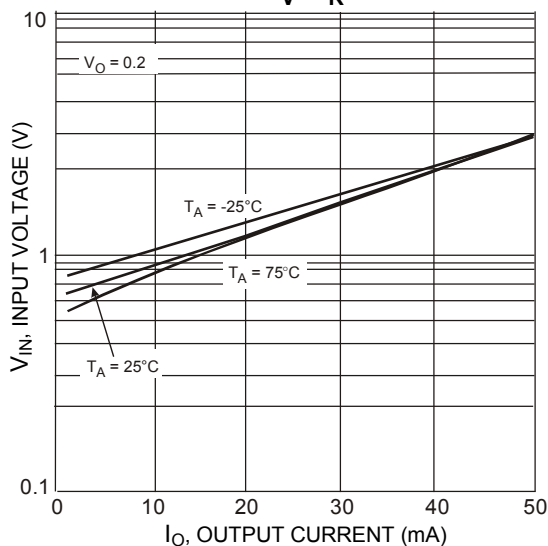
Typical Curves – DCX123JK PNP Section



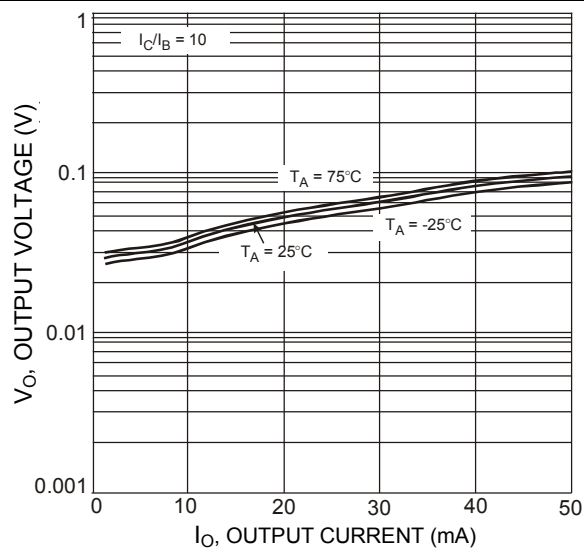
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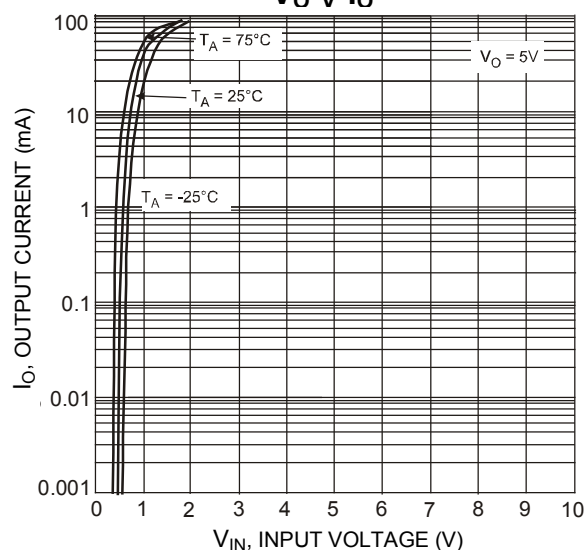
$C \text{ v } V_R$



$V_{IN} \text{ v } I_O$

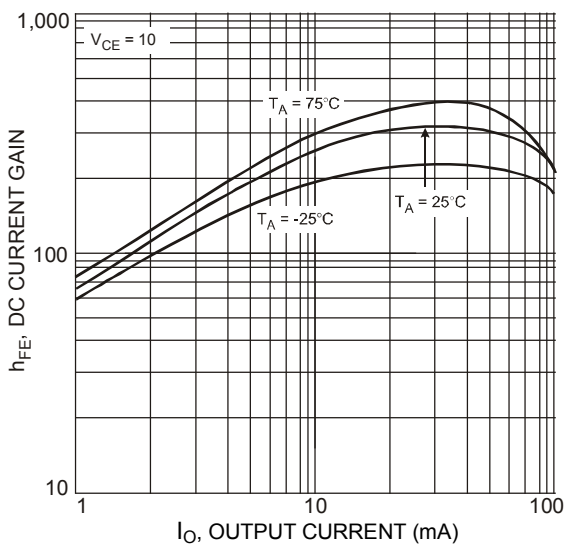


$V_O \text{ v } I_O$

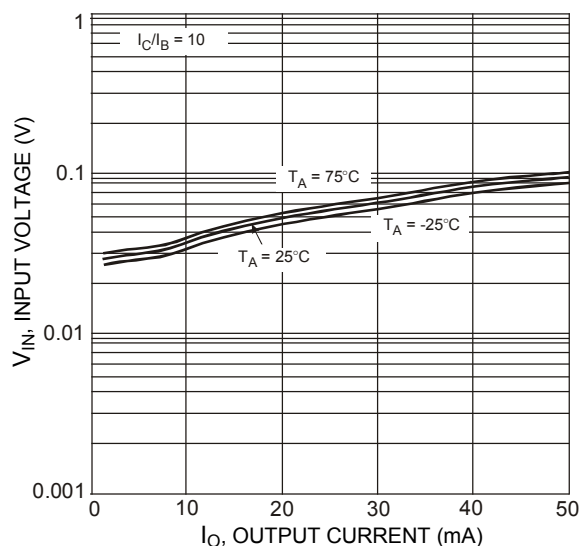


$I_O \text{ v } V_{IN}$

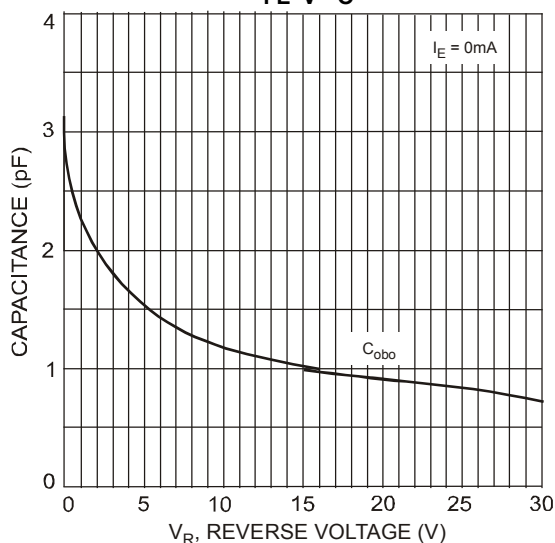
Typical Curves – DCX123JK NPN Section



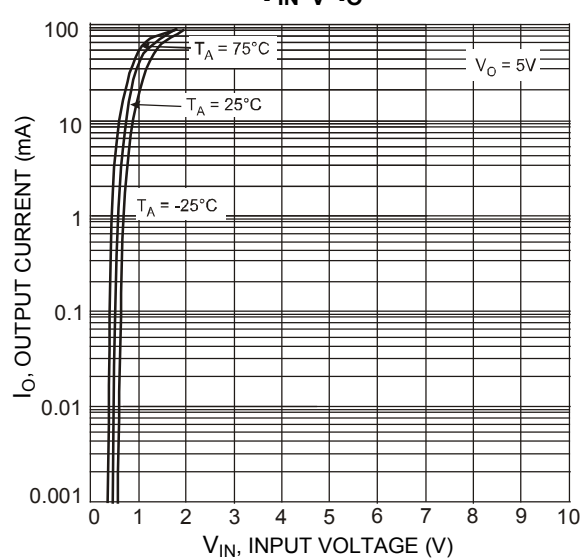
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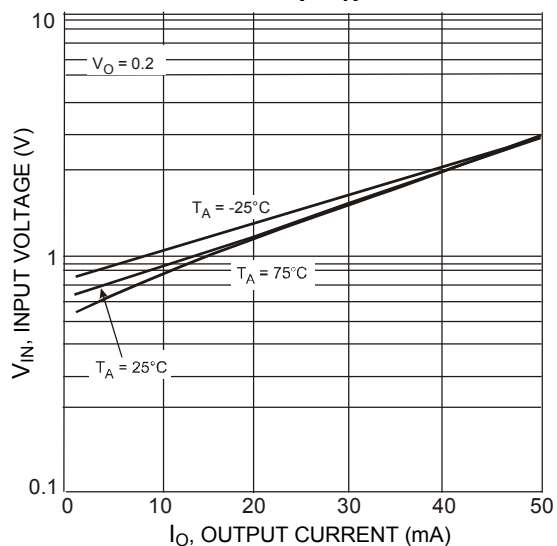
$V_{IN} \text{ v } I_O$



$C \text{ v } V_R$

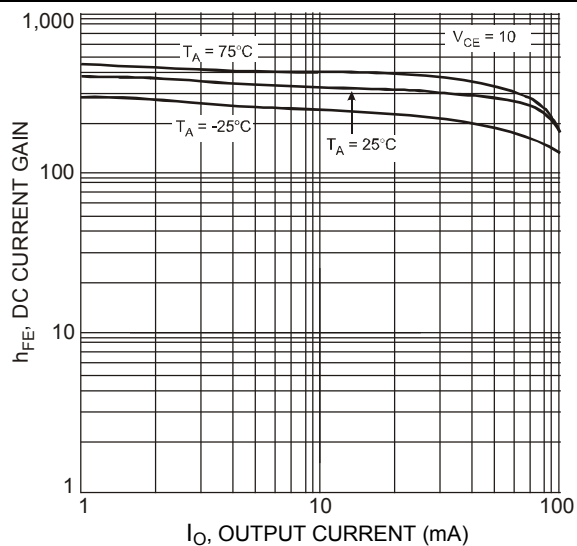


$I_O \text{ v } V_{IN}$

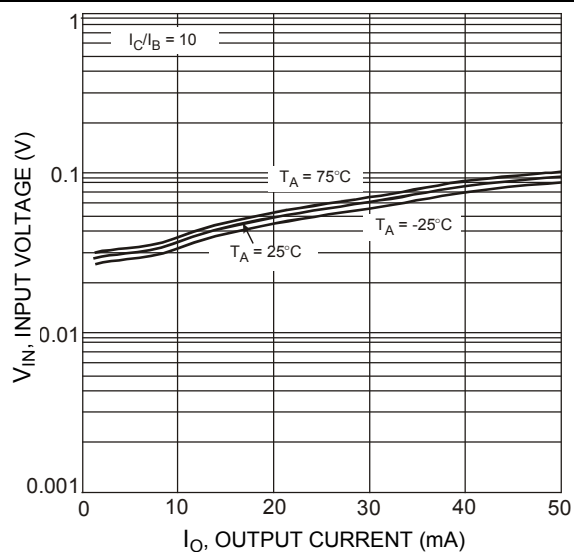


$V_{IN} \text{ v } I_O$

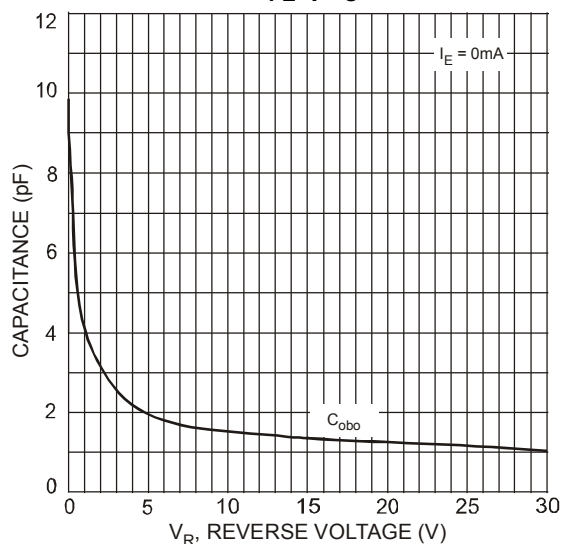
Typical Curves – DCX114TK PNP Section



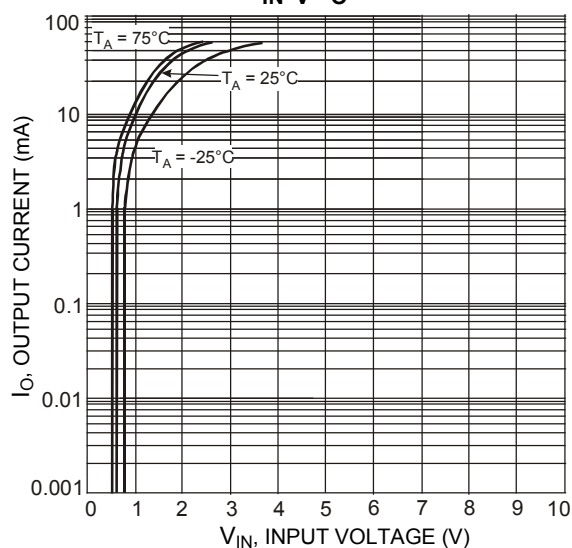
$h_{FE} \text{ v } I_O$



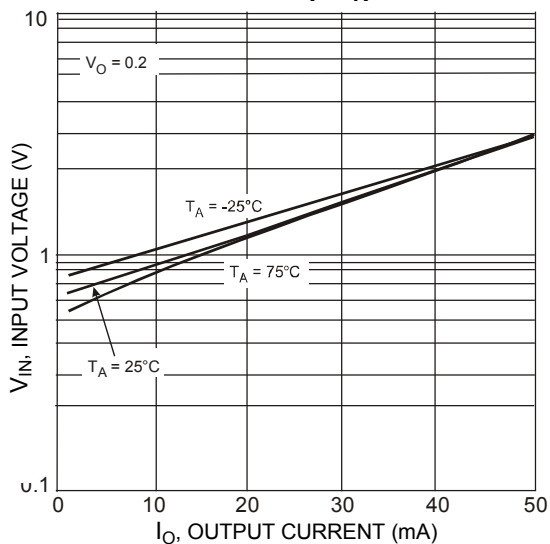
$V_{IN} \text{ v } I_O$



$C \text{ v } V_R$

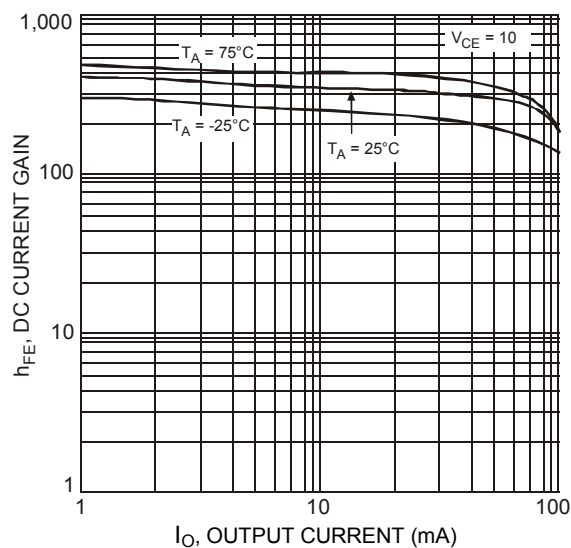


$I_O \text{ v } V_{IN}$

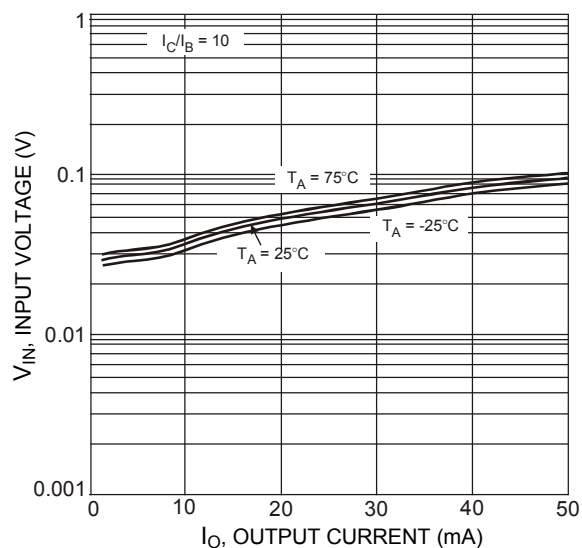


$V_{IN} \text{ v } I_O$

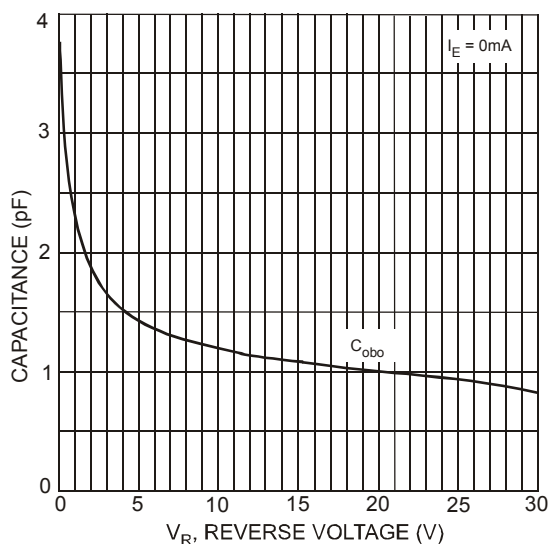
Typical Curves- DCX114TK NPN Section



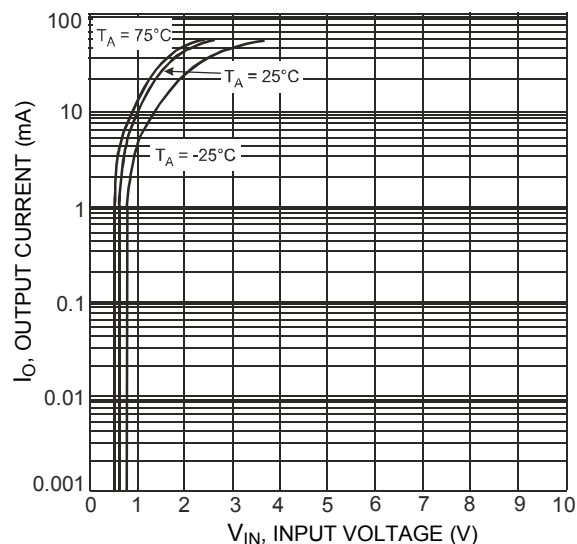
$h_{FE} \text{ v } I_O$



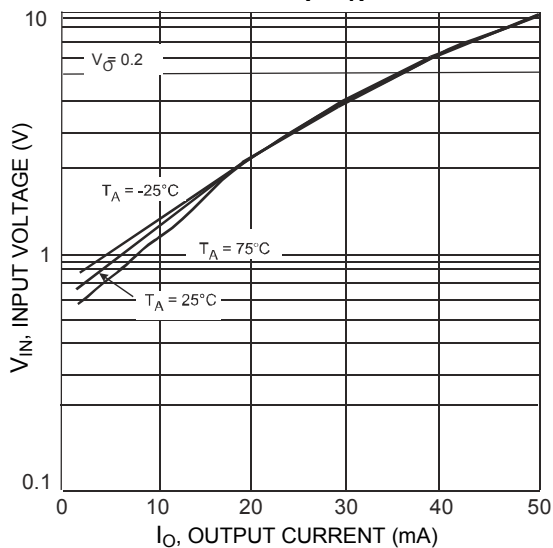
$V_{IN} \text{ v } I_O$



$C \text{ v } V_R$



$I_O \text{ v } V_{IN}$

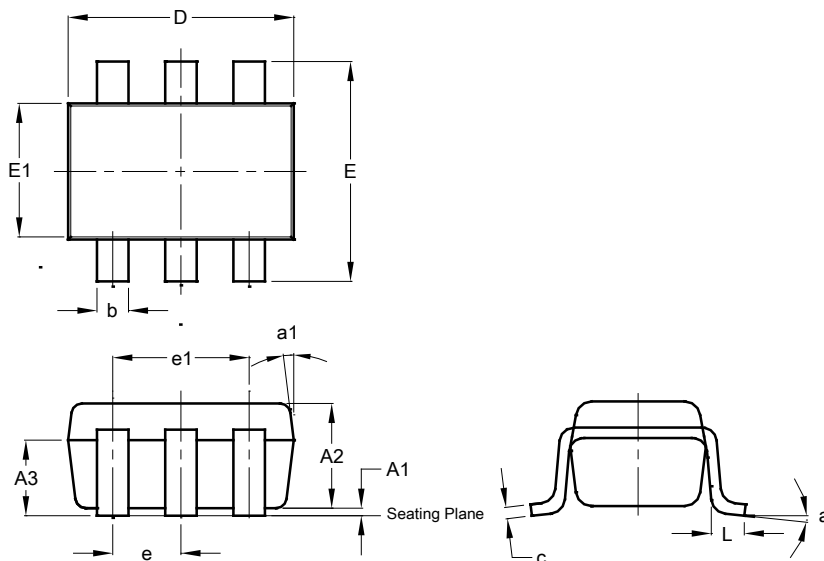


$V_{IN} \text{ v } I_O$

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT26

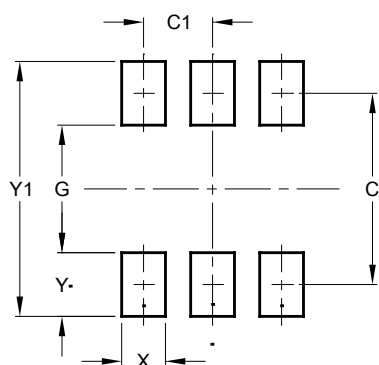


SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT26



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20

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